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Oscinella coxendix Fitch. Gulfcrest, Kushla, Saraland, Springhill, Mobile, Coden.

O. frit pusilla Meig. (*carbonaria* Loew). Kushla, Mobile.

BORBORIDÆ.

Borborus equinus Fall. Kushla.

? **B. neglectus** Malloch. Kushla, Springhill.

? **Leptocera ferruginata** Stenh. Kushla.

Also a number of unidentified species of *Leptocera.*

SCIOMYZIDÆ.

Sciomyza nana Fall. Mobile, Coden.

S. pubera Loew. Mobile.

Tetanocera umbrarum Linn. Kushla, Mobile.

T. arcuata Loew. Saraland.

HELOMYZIDÆ.

Helomyza quinquepunctata Say. Kushla (April).

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SYNOPTIC KEY TO THE SUBFAMILIES OF MIRIDÆ (HEMIPTERA-HETEROPTERA).

BY HARRY H. KNIGHT,

ITHACA, NEW YORK.

In preparing a paper on the Miridæ of Connecticut the writer was confronted with the necessity of preparing suitable keys for the determination of the species. The first big problem was to prepare a workable key for separating the subfamilies and the respective tribes. Reuter (1910) in his "Phylogenie und Systematik der Miriden" has given a classification of the subfamilies and divisions of Miridæ but no other worker has as yet been able to make practical use of his keys. We must give Reuter great credit for pointing out the characters by which the subfamilies should be separated but it is unfortunate he was unable to prepare tables that could be readily used by later workers. Reuter found that the structures of the arolia, corresponding to the pulvillæ between the tarsal claws of flies, in their modifications showed fundamental relationships between the species and groups within the family.

The present writer has spent much time studying and making drawings of claws and arolia in all the genera obtainable from North America and in this way is able to present a graphic record of the characters used in the classification with the hope that the same may make the keys more usable. Mr. Van Duzee has recently published (Univ. Calif. Pub., Vol. 1: 199–216, 1916) practical keys to the genera of Miridæ but has not made much use of the subfamily grouping.

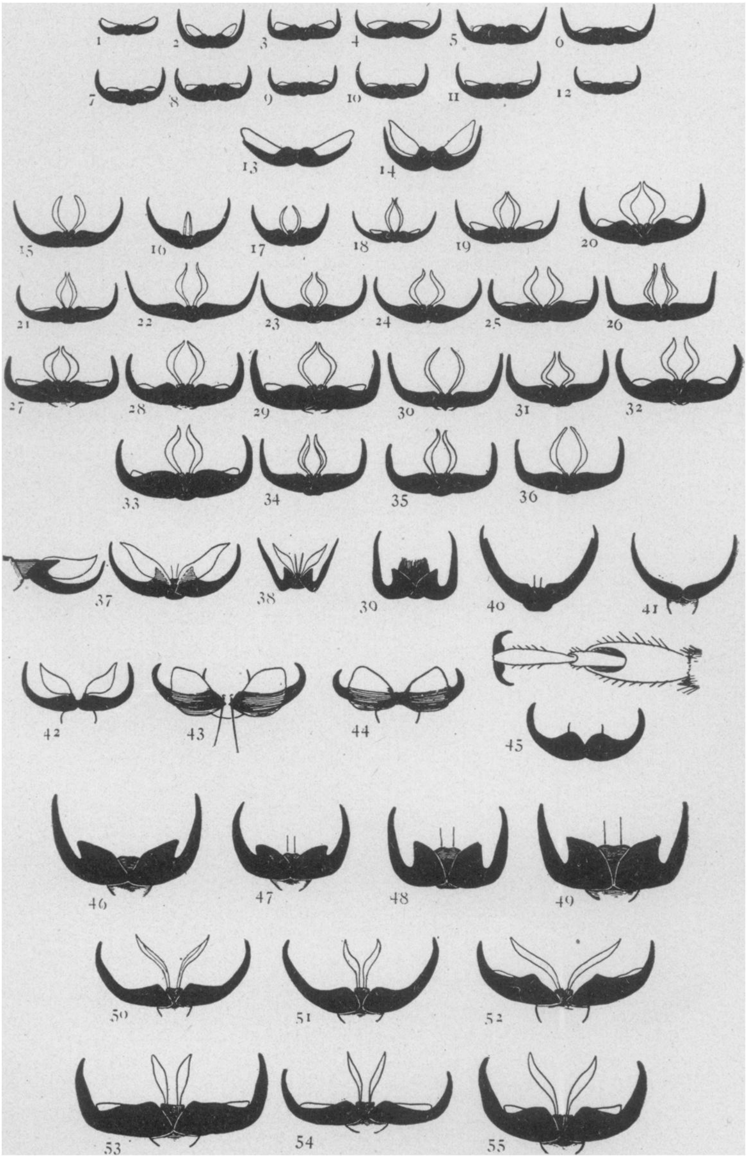
Dr. W. E. Britton has kindly given his approval to the publication of the present key in advance of the work on Connecticut Hemiptera and it is hoped by so doing, other workers may test it out and suggest improvements.

KEY TO THE SUBFAMILIES OF MIRIDÆ.

1. Arolia present 2
   Arolia absent (sometimes two parallel bristles simulating arolia, figs. 47–49) 8
2. Arolia arising distant at the base (fig. 42) or upon the inner angle of the claw (fig. 14); or pseudo-arolia connate upon the inner curve of the claw (figs. 1–13) 3
   Arolia always arising approximate at the base between the claws (figs. 15–36, 50–55), not connate with them but sometimes minute pseudo-arolia are also apparent on the inner curve of the claw (figs. 27–29, 53–55); free, more or less linear, converging or diverging at the apices 6
3. Prothorax simple, without an annuliform apical stricture........... 4
   Prothorax with an annuliform apical stricture, sometimes obsolete above in the middle 5
4. Loræ distinctly separated from the genæ; ultimate segment of the tarsi linear, tibiæ generally spinose ....**Phylinæ.**
   Loræ confluent with the genæ; ultimate tarsal segment incrassate (fig. 43), rarely linear, tibiæ destitute of spines ....**Bryocorinæ.**
5. Loræ linear, distinctly separated from the genæ; ultimate tarsal segment linear, tibiæ finely spinulose ....**Dicyphinæ.**
   Loræ confluent with the genæ; ultimate tarsal segment incrassate, tibiæ destitute of spines ....**Bryocorinæ.**
6. Arolia converging at their apices (figs. 15–36) ....**Orthotylinæ.**
   Arolia diverging at their apices (figs. 37, 38, 50–55) 7

7. Claws sharply bent (figs. 37, 38), arolia broadly divergent and more or less thickened .... **Dicyphinæ.**
Claws normal, arolia more or less linear, erect and diverging from the apical half (figs. 50–55) .... **Mirinæ.**
8. (1) Prothorax simple, destitute of an apical stricture .... **Phylinæ.**
Prothorax provided with an apical stricture, sometimes fine and shallow; when apparent only at the sides an impressed line extends back to the rear of the calli 9
9. Claws simple and slender, rarely spread widely (figs. 40, 41); tibiæ not strongly spinose, long and tapering at the apex or else greatly shortened, in the latter case segment I of the tarsi is unusually long, the head transverse and eyes strongly protruding .... **Cylapinæ.**
Claws thick, usualy sharply curved or bent, toothed near the base or thick and broadly curved (figs. 39, 45–49) 10
10. Pronotum with an apical gibbosely convex area; stricture apparent only at the sides from which an impressed line extends to the rear of the calli .... **Clivineminæ.**
Pronotum with an annuliform apical stricture 11
11. Hemelytra hyaline, glassy, ovate, with a sharply defined inverted Y-shaped red or fuscous mark (Hyaliodes) .... **Dicyphinæ** (pars).
Hemelytra not hyaline or glassy; claws more or less toothed, destitute of arolia but often with two stiff parallel bristles evident between the claws at base (figs. 46–49) .... **Deræocorinæ.**

The writer has found in addition to the arolia which arise normally between the bases of the claws, a translucent horn-like development occurring on the inner curve of the claws to which he has given the name *pseudo-arolia.* In certain species it is perfectly apparent that the pseudo-arolia is nothing more than the thin transparent edge of the claw (figs. 18–20, 27–29, 32, 33, 53–55). In the Phylinæ, however, this claw development of the pseudo-arolia is so prominent that Reuter and others have referred to "minute arolia" or "arolia connate with the claw." In *Oncotylus* and *Macrotylus* (figs. 13–14) we see the most confusing development of pseudo-arolia. In *Macrotylus* there is an unusual development of the pseudo-arolia and claw, a condition that has been regarded as "arolia attached at the base of the claw." To be true arolia the writer believes the origin of the same should be between the bases of the claws, and not upon the claw. In *Pycnoderes* and *Sixeonotus* is seen the most confusing condition of all, arolia or pseudo-arolia being greatly developed and broadly united with the claws. The morphological development of



Miridæ.

the arolia and pseudo-arolia offers a good field for investigation and the writer hopes in the future to do some work along that line.

The hamus, a cross vein occurring in the hind wing of Phylini and a few higher forms, is used by Reuter in his diagnosis of the subfamilies. This is an obscure and not easily used character, the writer not finding it necessary or of advantage to use in a key.

EXPLANATION OF FIGURES ON PLATE III.

Figs. 1–12. Claws of PHYLINÆ (Tribe Phylini).
- 1. *Chlamydatus associatus* (Uhl.).
- 2. *Reuteroscopus ornatus* (Reut.).
- 3. *Europiella rubida* (Uhl.).
- 4. *Microsyamma bohemani* (Fall.).
- 5. *Rhinocapsus vanduzeii* Uhl.
- 6. *Criocoris canadensis* V. D.
- 7. *Apocremnus ancorifer* (Fieb.).
- 8. *Apocremnus* sp.
- 9. *Campylomma verbasci* (Meyer).
- 10. *Plagiognathus fuscosus* (Prov.).
- 11. *Plagiognathus annulatus* Uhl.
- 12. *Microphylellus modestus* Reut.

Figs. 13–14. Claws of ONCOTYLINI.
- 13. *Onchumenus decolor* (Fall.).
- 14. *Macrotylus sexguttatus* (Prov.).

Figs. 15–36. Claws of ORTHOTYLINÆ.
- 15. *Labops hesperius* Uhl.
- 16. *Semium hirtum* Reut.
- 17. *Parthenicus vaccini* V. D.
- 18. *Halticus citri* Ashm.
- 19. *Halticus intermedius* Uhl.
- 20. *Strongylocoris stygicus* (Say).
- 21. *Orthocephalus mutabilis* Fall.
- 22. *Sericophanes noctuans* Knight.
- 23. *Alepidia gracilis* (Uhl.).
- 24. *Pilophorus amœnus* Uhl.
- 25. *Pseudoxenetus scutellatus* Uhl.
- 26. *Ceratocapsus modestus* (Uhl.).
- 27. *Lopidea robiniæ* (Uhl.).
- 28. *Hadronema militaris* Uhl.
- 29. *Ilnacora malina* (Uhl.).
- 30. *Orthotylus flavosparsus* (Sahlbg.).
- 31. *Orthotylus catulus* V. D.
- 32. *Orthotylus dorsalis* (Prov.).

33. *Heterocordylus malinus* Reut.
34. *Mecomma gilvipes* (Stal).
35. *Reuteria irrorata* (Say).
36. *Diaphnidia pellucida* Uhl.

Figs. 37–39. Claws of DICYPHINÆ.
37. *Dicyphus agilis* (Uhl.) (also lateral).
38. *Dicyphus famelicus* (Uhl.).
39. *Hyaliodes vitripennis* (Say).

Figs. 40–41. Claws of CYLAPINÆ.
40. *Cylapus tenuicornis* Say.
41. *Fulvius brunneus* (Prov.).

Figs. 42–44. Claws of BRYOCORINÆ.
42. *Monalocoris filicis* (Linn.).
43. *Pycnoderes dilatatus* Reut.
44. *Sixeonotus insignis* Reut.

Fig. 45. Claws of CLIVINEMINÆ.
45. *Largidea davisi* Knight, claws and hind tarsus.

Figs. 46–49. Claws of DERÆOCORINÆ.
46. *Cimatlan venatorium* (V. D.).
47. *Eurychilopterella luridula* Reut.
48. *Camptobrochis grandis* Uhl.
49. *Deræocoris ruber* (Linn.).

Figs. 50–55. Claws of MIRINÆ.
50. *Pithanus maerkeli* (H. S.).
61. *Stenodema trispinosum* Reut.
52. *Zoshippus* sp.
53. *Platytylellus insitiva* (Say).
54. *Phytocoris lasiomerus* Reut.
55. *Lygus vanduzeei* Knight.

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CONCERNING LYGÆIDÆ.—NO. I.

BY H. G. BARBER.

ROSELLE PARK, N. J.

Tribe MYODOCHINI Stal.

In Biol. Cent. Amer., 1882, p. 399, Distant described a new genus *Pseudopamera* making his *aurivilliana* the type; eleven years later in the Supplement, 1893, p. 399, he added *Pseudopamera forreri*. The former species in all probability belongs to the genus *Ligyro-*